The discussion on the lack of (affordable) houses in Oxford (in particular, but the same holds for the rest of England) resolves a lot on the fact that there aren’t enough houses and apartments around. Both sales price and rents are extremely high for what is being offered as living accommodation. Measured relative to income Oxford is the least affordable in the UK.\textsuperscript{1} The obvious thing to do is to build more houses, however this solution meets great protests since it would imply the reduction of green space. This so called green-field development is not necessary to solve the issue. Brown-field development is often meant as house-building at old industrial grounds, potentially far away from city centres. The option I believe merits serious consideration is redevelopment of existing neighbourhoods.

The problem of housing can be solved by redevelopment of existing neighbourhoods, and be self-financing. This solution would entail the purchase of a series of previous century homes that are often in a abominable state and don’t suit current day needs, and replace them with modern apartment buildings that allow for a greater density of households to live in the same space without a danger of overpopulation. I lay out the potential of this plan below. Although the numbers can be tweaked, broadly speaking Oxford has the potential to triple the number of homes without a single loss of green space, and with apartment buildings that don’t go higher than four storeys. These numbers comfortably meet the estimated need for housing in Oxford.\textsuperscript{2}

\textbf{Current situation}

My first observation is that many homes build in the area of Cowley road and Iffley road, where I live, are in a very sorry state. Despite the best intentions of some home owners who refurbish, and take care of, their homes, many of these houses are unfit for current day needs and do not meet future standards. Many have been build before the great wars, and as such they are

\textsuperscript{1}Update, 27 August 2015. There is some discussion to what extend this statement is strictly true, given the way one can measure (a representative) house price and income. There might be even less affordable places in the UK (Cambridge?), nevertheless, Oxford will most likely always rank high. I thank Charles Young, Oxford, for pointing this out.

\textsuperscript{2}Up to 32,000 by 2031 according to Oxford Mail, 29 July 2015, “Councils in spat over housing”.

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small and not energy efficient. Students share such houses in cramped situations, in unhygienic conditions, with overgrowing gardens. Refurbished basement are rented out as studios that barely receive natural light and their occupants can listen to the sound of drainage whenever the family upstairs uses the loo. Such upgrades for environmental and productivity reasons are almost unfeasible and very costly to establish in old homes.

There are very few modern apartment buildings in this area, but there exist some. These apartment buildings are not skyscraper flats, and often do not go higher than the already existing buildings, limiting themselves to three or four stories. These buildings are a much more efficient and civilised use of space: soundproof from heavy traffic in the area and between apartments in the same building, energy efficient with double glazing and modern heating and cooking facilities, underground-parking rather than at the road, easy access to protected bike storage avoiding thefts while encouraging bike use, etc. In general, society as a whole would benefit in many ways from extending this modern living. Such apartments are more energy efficient and therefore a lower burden on the environment. The creation of additional homes in this way has the potential to meet demand of houses sufficiently to reduce the price of homes (calculated as rent or sale price per square foot). Since such redevelopment does not require the loss of green space, and remain closely connected to the old city centre, quality of life for such neighbourhoods will be high.
The numbers

What do the numbers tell us. The Office of National Statistics gives data on population at the lowest geographical unit, the output area (2011 figures). I selected an area of Cowley road and Iffley road for my initial analysis, see Figure 1 the bounded area. The blue parts indicate population density at the smallest census output area available. The question is “How many more households (homes) would fit in this area if it was all lifted to modern apartment density?” I will only select those areas that have at least a population density of 50 (so the white spots and part of the areas shaded in the lightest blue are excluded). This means that completely undeveloped parts, as well as sparsely built areas (for instance because of mansions or exclusive commercial zones), are not taken into account. I take as a benchmark for modern development a single area that has only a modern apartment building located on it (The apartment block of Reliance way, located a bit right from the middle of the shaded area). I take the density for population and household of that area and multiply that with the area under consideration. Figure 2 indicates the areas that are selected under these criteria. Note that very light shaded and white areas are not selected.

Currently, in the developed areas under consideration, there are 18,069 persons living in 6,787 households. If this were changed to the standards of modern living, this could increase to 32,350 people in 15,170 households. Meaning a gain of 8,380 households or homes in the neighbourhood around Cowley and Iffley road only. Figure 1 indicates that parts of the outskirts of Oxford have similarly light shaded areas, and expanding the same methodology to the larger Oxford area gives similar multiples, and indicates the potential for 57,000 additional homes. Twice or three times the number of people could live in this area without a single loss of green space. This is not an overcrowding situation. The Figure indicates that parts of central Oxford are even more densely populated. Such redevelopment should of course be combined with new development of public infrastructure such as proper bike lanes, but also including...
telecommunication and electricity networks.

Financial and political feasibility

Financially, such redevelopment could be self-financing. The costs of redevelopment are the purchase of homes from current owners, demolition of the old homes, and construction of the new apartments. Since there will be twice or three times the number of homes in the same area, the sale of such apartments could cover all the upfront costs. Additionally, the increase in population will provide additional (council) tax revenues, while a modern neighbourhood will allow for higher productivity and lower maintenance costs. Such future benefits ought to be taken into account when analysing the cost of redevelopment. Rather than direct purchase of homes, homeowners could also be offered the option for a new apartment home against their current home, needing only a temporary accommodation for the time of development. Naturally, more details would be needed to make the actual financial calculations, while it is obvious that the city council would gain less under this plan then if it would sell off houses in cheaply developed green space to the detriment of everyone.

Admittedly, the idea that an entire neighbourhood would need to be rebuilt from scratch will find opposition from current homeowners. This is similar to proposals for green-field development that are strongly contested by local homeowners. Some homeowners may have lived there for many years. However, Oxford appears to be dominated by landlords that are able to rent out properties against exorbitant prices, without any requirement to update their properties to modern standards. This is precisely due to the lack of resolve from the government to construct more homes. Those landlords reap all the profits from this situation. The decision to redevelop an existing neighbourhood would need council action as private investors cannot overcome the last homeowners that would refuse to sell their home against any price.

The potential to solve the housing problem under this scheme is clear. Developed space in Oxford can be used much more efficiently for the greater benefit of the entire community. Old homeowners would be fully compensated, while new homeowners would gain through lower prices from increased supply or higher quality for the current prevailing price. Redevelopment of a larger area would also allow enough flexibility to think about how to integrate affordable community homes, save culturally important buildings, develop parks in existing green spaces, while updating the infrastructure to current day and future needs. In fact, the methodology set-out here indicates the potential for more homes that are actually estimated to be needed, therefore offering sufficient flexibility for detailed planning.

Update, 27 August 2015. An earlier version suggested that that old houses do not have the capability to connect to “smart grid” networks. The type of smart grid that is currently being implemented in the UK, whereby households can instantly see use and price on a special device (the ‘smart meter’), only requires a connection to a telephone or mobile network next to the standard electricity grid, and therefore causes no limitation for most houses, old or new. I owe this correction to Andrew Dean (The Boston Consulting Group, Toronto, Canada).